REMR Technical Note OM-MS-1.9
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REMR Management System for Stone Riverine Training Dikes and Revetment

Purpose

To develop uniform procedures for inspecting and describing the condition of stone riverine training dikes and revetment. To provide decision support in prioritizing REMR activities for such structures.

Background

REMR Management Systems are being developed for a host of Civil Works structures: concrete lockwalls, miter gates, and steel sheet-pile structures to name but a few. River training dikes are fingerlike mounds of stone that extend from the river bank towards the navigation channel. Dikes serve as channel control structures by promoting higher flow velocity in the navigation channel and reduced flow velocity near the bank. Revetment structures are used for bank stabilization and usually are made of riprap, placed stone, concrete mattress, or other material. The Corps is responsible for the construction and maintenance management of more than 10,000 dike structures in shallow draft waters and unknown miles of revetment (Derrick, Gernand, and Crutchfield 1989).

Overview

REMR Management Systems use inspection procedures that produce uniform and consistent descriptions of the condition of a structure. This description is captured in a single number, the Condition Index (CI), which ranges from 0 to 100 and conforms to the REMR Condition Index scale (see REMR Technical Note OM-CI-1.2). A personal computer (PC) based program couples the CI inspection data with database management and repair cost analyses, which provide decision support in the selection of efficient and cost-effective REMR activities.

Application

The CI inspection for stone navigation dikes and revetment requires close examination of each structure from a boat and from the shore. The location and extent of damage such as loss of grade, loss of length, or the presence of bank erosion are recorded. Flanking, where the river has compromised the dike by moving behind its bank end, is also noted. Most measurements are made by simple visual observation, though measurement of quantities such as loss of dike length may require surveying equipment, or the judgment of personnel more familiar with the dike.

The software supporting the REMR Management System runs on IBM AT compatible PCs under DOS 3.2 or higher. The program maintains an inventory of dike structures, including location, construction, inspection, and maintenance history for each dike. Selected lists of dikes can be sorted according to CI or independently established repair priority. A repair cost estimating form for each dike allows the determination of real-time costs for various repair plans that produce desired condition levels.

Reference

Derrick, D. L., Gernand, H. W., Crutchfield, J. P. (1989). "Inventory of River Training Structures in Shallow Draft Waterways", Technical Report REMR-HY-6, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.